

GREEN HARBOR
MARSHFIELD
MASSACHUSETTS

SURVEY

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASS. 02154

U. S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS

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WALTHAM, MASS. 02154

ADDRESS REPLY TO:
DIVISION ENGINEER

REFER TO FILE NO. NEDED-R

31 January 1966

SUBJECT: Survey (Review of Reports) on Green Harbor, Marshfield,
Massachusetts

TO: Chief of Engineers
ATTN: ENGCW-PD

SYLLABUS

The Chief of Engineers on 25 October 1965, under authority of Section 107 of the 1960 River and Harbor Act, approved for accomplishment improvement of navigation facilities at Green Harbor, Massachusetts. Formal adoption as a Federal project was made on 15 December 1965. The Division Engineer finds that no further navigation improvement in addition to that authorized is warranted at this time.

* * * * *

1. This report is submitted in compliance with an item contained in Section 109 of the River and Harbor Act of 14 July 1960 (Public Law 86-645), which reads as follows:

"The Secretary of the Army is hereby authorized and directed to cause surveys to be made at the following named localities and subject to all applicable provisions of Section 10 of the River and Harbor Act of 1950: - - - Green Harbor, Marshfield, Massachusetts."

DESCRIPTION OF NAVIGATION CONDITIONS

2. Green Harbor is a small tidal estuary on the west side of Massachusetts Bay, approximately 35 miles by highway southeast of Boston, Massachusetts. It is located within the Town of Marshfield in Plymouth County and situated at the mouth of the Green Harbor River, a small stream draining marshlands to the northwest.

3. The entrance to Green Harbor is protected by two stone mound jetties having an arrowhead configuration with a navigation opening of about 250 feet at the outer ends. The east jetty is 750 feet long and the west jetty is 1,350 feet long. The jetties have a top width of about 5 feet, an elevation ranging from about 7 to 12 feet, and side slopes varying from 1 on 1 to 1 on 4. The harbor extends $\frac{3}{4}$ mile inland from the jetty entrance northwesterly, to an earth-concrete dike equipped with tide gates. The dike marks the head of navigation and carries State Route 139 across the harbor. Approximately 1,000 feet inland from the ends of the jetties, the harbor constructs to a channel about 100 feet in width at mean high water.

4. The harbor entrance is exposed to a limited extent to winds and waves from Cape Cod Bay to the southeast. The predominant directions of wave approach are from the east and east-northeast from which ocean waves are generated over long fetches. The alignment of the jetties and the shoreline configuration of the harbor entrance provide for well protected waters within the harbor proper. At mean low water most of the harbor becomes exposed mud flats. The remaining area consists of several acres of anchorage near the Town pier (dredged to a depth of 6 feet by the State of Massachusetts in 1958) and a narrow, shoal, and winding natural waterway extending from the entrance to the head of navigation. The controlling depth in the waterway is taken as 6 feet in the entrance channel and mean low water within the harbor channel. The harbor is used by 20 full-time and 12 part-time lobster boats and about 290 recreational craft.

5. The mean range of tide is 9.0 feet. The spring tide range is 10.5 feet. The locality is shown on U. S. Coast and Geodetic Chart No. 245, U. S. Geological Survey Map (Duxbury Quadrangle), and on the map accompanying this report.

TRIBUTARY AREA

6. The area immediately tributary to Green Harbor is the community of Marshfield. The population of Marshfield in 1960 was 6,748, an increase of 107 percent over the 1950 figure. It is one of a number of small towns in Plymouth County (1960 pop. -248,449), which utilize the boating facilities of the small coastal harbors such

as Green Harbor. Recreational boating enthusiasts of the metropolitan area of Boston further increase the total summer population of the Green Harbor area. Marshfield is a shopping and commercial center for an area devoted primarily to farming, some commercial fishing, recreational boating and other vacation travel activities.

PRIOR REPORTS

7. Green Harbor has not previously been the subject of a Federal navigation study, or improved under a Federal project.

DIFFICULTIES ATTENDING NAVIGATION

8. The navigation difficulties are: (1) a shifting and shoal entrance channel due primarily to the passage of littoral materials through, around, and over the west jetty, and to a lesser extent to settling out of sandy materials carried seaward from the inner harbor by tidal currents; (2) a crooked, narrow, and shoal harbor channel which limits boat access to upper harbor areas to periods of high tide; (3) insufficient anchorage and berthing space for the expanding recreational fleet; (4) an exposed entrance channel due in part to the overtopping of the damaged east jetty by waves approaching from the northeast and east; and (5) strong tidal currents at the "narrows" making for hazardous navigation conditions.

PROPOSED IMPROVEMENT

9. This survey report was authorized to determine the need and justification for providing channel and anchorage improvement within the harbor and a stabilized entrance channel for present and prospective fishing and recreational fleets. At the public hearing held in Marshfield on 17 April 1962, the requests of local interests for navigation improvements consisted essentially of: (a) an entrance channel and a harbor channel of adequate width and depth; (b) additional anchorage, and (c) repairs to the jetties.

10. The present trend in expansion of recreational fleets along the coast of Massachusetts Bay has placed great demands on harbor facilities resulting in capacity use of existing facilities in some locations and overcrowding in others. Based on present use and its potential for increased use through improvement, Green Harbor is

considered to be a logical location to provide additional facilities for small craft. In view of the difficulties to navigation described above, full use of the harbor by small craft is precluded. From the study made of the harbor, it is concluded that Federal improvement for navigation is warranted.

11. A plan of improvement has been developed which represents essentially the desires of local interests. The plan of improvement, shown on the attached map, would provide for:

(a) Dredging a 6-foot deep channel (8 feet at entrance), 100 feet wide extending 4,000 feet to a small turning basin at the head of navigation;

(b) Dredging a 5-acre anchorage, 6 feet deep at the Town pier;

(c) Sealing, rebuilding in part, and extending the west jetty 200 feet at elevation ± 12 ; with a dike to the beach berm at elevation ± 14 ; and

(d) Raising the east jetty to elevation ± 14 .

The jetties at the entrance are to be constructed in a manner as to make them usable for sport fishing.

12. The plan represents the most economical and practical development for permitting increased use of both existing and future facilities. The scope and costs of the plan are of such magnitude as to make the plan eligible for accomplishment under the general authority of Section 107 of the 1960 River and Harbor Act. The plan was recommended for adoption under the general authority.

13. All Federal, State and local agencies interested or affected by the proposed navigation improvement were consulted during the study and they concur in the project plan.

14. State and local officials were consulted concerning the suitability of the plan of improvement. By letter dated 24 March 1965 and 26 March 1965, State and local officials respectively commented on the adequacy of the proposed plan for meeting the navigation needs

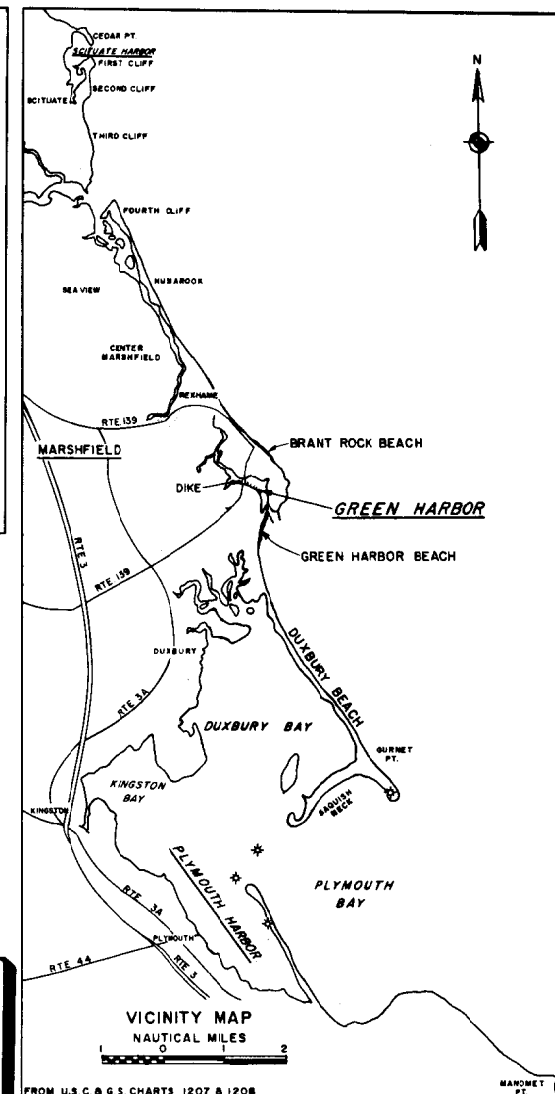
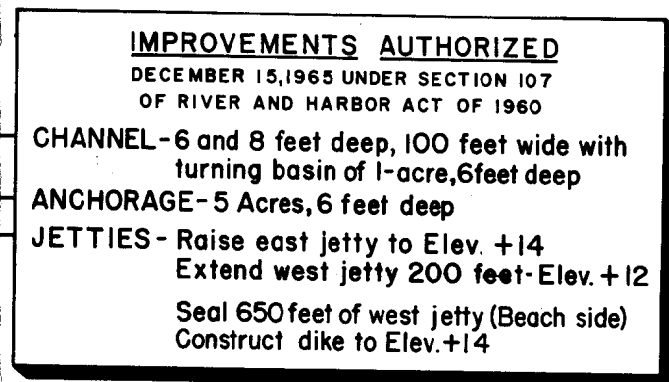
of the harbor and also indicated that they would be willing to meet the requirements of local cooperation, subject to action by State legislature and local town meetings. By letter of 2 December 1965, the Governor of the Commonwealth of Massachusetts gave his approval of the project.

15. Accordingly, under authority of Section 107 of the 1960 River and Harbor Act, a Federal project to provide the recommended improvement was formally adopted on 15 December 1965.

16. In view of the above action, the Division Engineer concludes that the needs of present and prospective navigation in Green Harbor have been met and therefore recommends no further navigation improvement for Green Harbor at this time.

Incl
Map

E. J. RIBBS
Colonel, Corps of Engineers
Acting Division Engineer



U.S. ARMY ENGINEER DIVISION, NEW ENGLAND CORPS OF ENGINEERS, WALTHAM, MASS.	
GREEN HARBOR MASS.	
SHEET 1 OF 1	REPORT MAP SCALE 200 IN FEET APRIL 1966
APPROVED: <i>Wm. L. Kelly</i> CHIEF ENGINEERING DIVISION SUBMITTED: <i>E. Price</i> CHIEF PLANNING AND REPORTS BRANCH <i>John J. Staggerty</i> CHIEF PLANNING AND REPORTS BRANCH <i>Norman J. Husted</i> PROJECT ENGINEER	TO ACCOMPANY SURVEY REPORT DATED: 31 JANUARY, 1966 FILE NO. 11-F-11-3

GREEN HARBOR, MARSHFIELD, MASSACHUSETTS

Information Called for By Senate Resolution 148, 85th Congress
Adopted 28 January 1958

1. This study considered the need and justification for providing navigation improvements for recreational and fishing craft at Green Harbor, Massachusetts to reduce crowding of craft moored in the harbor and to reduce hazards to navigation in the entrance channel.
2. The principal difficulties of navigation at Green Harbor are that the natural entrance and harbor channel is shoal, narrow, and irregular resulting in delays and unsafe navigation conditions. The amount of berthing and mooring area available cannot accommodate the existing fleet of recreational and fishing craft. Therefore, the continued rise and future development of Green Harbor depends on a safe, stabilized entrance and harbor channel and additional anchorage and berthing facilities. The study found that Federal improvement of Green Harbor is warranted. It was also concluded from the study that open anchorage would not be sufficient to economically accommodate the anticipated prospective fleet, marina facilities would be required.
3. As a result of the study, the Chief of Engineers approved for accomplishment, an improvement for Green Harbor under authority of Section 107 of the 1960 River and Harbor Act as amended in 1965. The improvement was formally adopted as a Federal project on 15 December 1965 and provides for: (a) Dredging a 6-foot deep channel (8 feet at entrance), 100 feet wide extending 4,000 feet to a small turning basin at the head of navigation; (b) dredging a 5-acre anchorage, 6 feet deep at the Town pier; (c) sealing, rebuilding in part, and extending the west jetty 200 feet at elevation +12; with a dike to the beach berm at elevation +14; and (d) raising the east jetty to elevation +14. It is considered that the project as approved would be sufficient to meet the needs of the existing and prospective commercial fishing and recreational fleets.
4. Local interests concur that the plan of improvement authorized would meet the needs of present and prospective navigation, and have stated a willingness and ability to meet the requirements of local cooperation in connection with the project.
5. In view of the above provisions for small craft navigation in Green Harbor, no further Federal improvement beyond that presently authorized is recommended.